

the elimination of the urea thus checked. In some of the cases the children were puffy about the face, without any blood or albumen occurring in the urine; this perhaps was caused by the retention of urea. 4. On the interoccurrence of Bright's disease, the urea in some cases was greatly diminished; in other cases no diminution occurred.

III. *On the Chlorides*.—1. The chlorides were never found absent in any of the cases analyzed. 2. Their amount was always much diminished during the fever days. 3. After the fall of the temperature the chlorides increased gradually. 4. In one case in which Bright's disease supervened the chlorides were estimated; they suffered very little diminution.

IV. *On the Urinary Water*.—Often during the fever there is no diminution in the amount of urinary water; in some cases it is increased.

V. *On the Albumen in the Urine*.—1. The albumen appears at two different periods: (a) during the fever days; (b) later during the non-fever days. Out of twenty-one cases, it only appeared once during the fever days. Of eighteen cases which were in the hospital for a considerable time, in seven albumen appeared during the fever free days. 2. The time of its appearance varied from the ninth to the twenty-third day. 3. The duration of the albumen in the urine varied from three to forty-nine days. 4. There is no necessary connection between the intensity of the inflammation (tested by the elevation of the temperature) and the duration of the albumen in the urine. 5. There is no necessary connection between the intensity of the inflammation and the amount of albumen in the urine.

VI. *On Blood in the Urine*.—1. There may be an elevation of the temperature, due probably to inflammation of the kidney, without any blood in the urine. 2. In no case did blood appear without previous elevation of the temperature. 3. In some cases the blood continued long after the fall of the temperature, and thus probably after the decline of the inflammation.

VII. *Relationship between the Blood and Albumen in the Urine*.—1. A very large amount of albumen may occur in the urine without any blood. 2. Blood to a very large amount may occur in the urine with the slightest trace of albumen; and if the blood-corpuscles be allowed to settle, the supernatant fluid may give no evidence of albumen. These cases given were seldom dropsical; they, however, often looked puffy in the face. In some cases the second elevation of the temperature due to Bright's disease was not followed even by puffiness. In one case the patient was puffy, without any other indication of Bright's disease.

VIII. *On a Cycle in Disease*.—In the cases given, the temperature did not run an equable course, neither remaining at the same temperature throughout; but formed cycles, composed of a variable number of days, each cycle, however, being composed of the same number of days in the same patient. The cycles in the great majority of cases were composed of five days.

IX. *On a Cycle in Health*.—The author tries to prove from the cases given, that in health we have a daily and a five days' cycle of tissue change. He further tries to show that in fevers we have a great increase of this daily and five days' cycle of tissue change, from which results the great elevation of the temperature.—*Med. Times and Gaz.*, Feb. 15, 1862.

27. *Influence of Lactic Acid upon the Endocardium and in the production of Rheumatism*.—VIRCHOW notices the experiments of Dr. Richardson in which he seeks to prove directly what Prout had originally supposed, which Williams and Todd had also conjectured—that the accumulation of lactic acid in the body was the cause of rheumatism. He also alludes to the observations of Schenlein, of Joseph Meyer, and of an anonymous writer, "A. W." on the same subject.¹ He remarks that none of the German observers, in their experiments, had found that rheumatoid affections of the limbs had been produced, and Virchow suggests that possibly in certain cases in which it was supposed that such had been artificially produced, the appearances were the result of

¹ Götting. gelehrten Anzeige, 1859, st. 168, s. 1678.

injury to the joints occasioned in the necessary operation of binding the animal's limbs.

It was, however, quite different with regard to the influence of lactic acid upon the endocardium. On this point the observations of Richardson had been abundantly confirmed by late experimenters. In eight cases in which RAUCH had injected lactic acid into the jugular and abdominal veins, changes in the endocardium, and gelatinous thickening of the valves, were produced; and even eight hours after injection into the jugular veins these effects were found. Rauch, who had minutely examined the thickened and swollen granular parts of the valves, takes exception to the statement of Richardson, that it was the result of an exudation. He found, as Virchow had often previously found in the human subject, that it consisted of a soft mucus-like tissue, with an increase and growth of the connective-tissue corpuscles, which at a later period undergo fatty changes, and that an epithelium existed. He concluded that the influence of the lactic acid was exercised not upon the free surface, and this especially as the right side of the heart was not much affected.

Dr. MÖLLER looks upon the swelling and redness found at the edges of the valves as a post-mortem phenomenon, and says they do not occur in animals examined directly after death. Both Rauch and Möller found in some cases a want of rhythm in the heart's movements and systolic bruits. Möller considered the murmur to be anæmic, whilst Rauch attributed them to an affection of the valves.

Dr. G. REYHER, encouraged by Virchow, was led to undertake a series of examinations of the hearts of dogs which were killed without having had lactic acid injected into them. These dogs were of every age up to nineteen years old, were killed in the speediest possible way by prussic acid or the blowing of air into the jugular veins, and their hearts were examined as quickly as could be. On opening the very first heart of an apparently healthy dog, the author found that the very same anatomical changes in the heart's valves existed as Rauch and Richardson found after their injection of lactic acid. Thirty-two dogs were sacrificed in all, and similar changes, in a greater or less degree, and evidently of various dates, were universally found, except in fœtal hearts. Moreover, in one dog, in which the writer had during life injected a solution of lactic acid (according to Richardson's directions) into the peritoneal cavity, and which died twenty hours after, on examination after death the results of a *chronic* endocarditis were found, but nothing like the remains of any acute endocarditis. The various conditions of the valves and their appendages, as displayed after death in these dogs, are minutely given, and their development, as it were, traced from the simplest up to the most decided form of alteration. Moreover, the microscopical characters of the altered valves and new formations are elaborately given in detail, sections as well of the fresh structures as of prepared parts having been carefully examined. For these general and minute descriptions we have not room in this place. In conclusion, from the observations of the author, the following are interesting:—

1. That dogs, and probably also many other mammalia, are not so free from pathological changes in the heart as is supposed, and consequently that great caution is necessary in drawing inferences from such experiments upon these animals. (Dr. Albaum also found in the hearts of young horses, cats, and rabbits, similar changes to those found by the author in the dog.)

2. That in all the thirty-two apparently healthy dogs whose hearts were examined, the changes observed were "identical" with those described by Richardson and Rauch as the result of lactic acid injection, and called by the latter "parenchymatous endocarditis."

3. As Richardson and Rauch have not sufficiently avoided sources of error (owing to neglect of the examination of healthy dogs), their investigations are of no value in support of the supposed origin of endocarditis from the injection of lactic acid into the peritoneal cavity or jugular veins.

4. Consequently, that endocarditis arises from an accumulation of lactic acid in the blood remains un-proven.—*Brit. and For. Med. Chir. Rev.*, Jan. 1862, from *Virchow's Archiv.*, Bd. xx. and xxi.